

## NASA's Space Simulation Test Facilities

# NASA GLENN RESEARCH CENTER: THERMAL VACUUM TESTING FACILITY 6



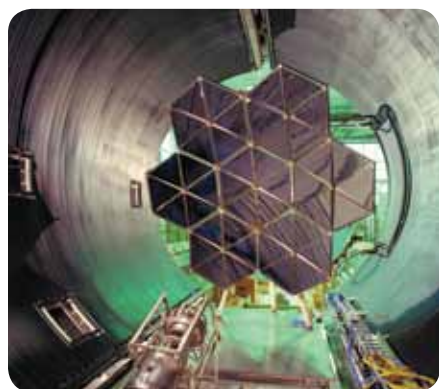
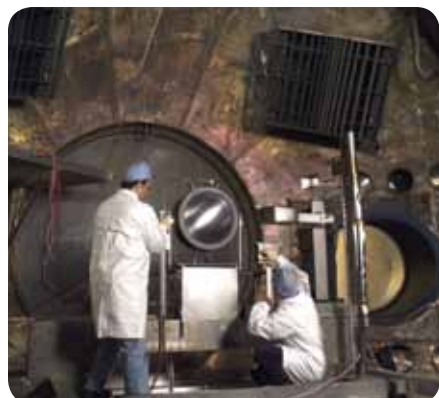
Vacuum Facility 6 (VF6) is a 25-foot-diameter thermal vacuum facility located at NASA Glenn Research Center (GRC) in Cleveland, OH. The test chamber and supporting infrastructure continue to serve as a valuable resource in space environmental ground testing. Some unique facility capabilities include a large chamber volume (25 feet in diameter by 70 feet long), as well as the use of a liquid-nitrogen-cooled shroud and a solar simulator specifically designed for solar-concentrated power.



The clean, cryogenic vacuum system provides a no-load base pressure of  $5 \times 10^{-7}$  Torr at a pumping speed of 900,000 liters/second on air. The test chamber has a 16-ton loading capacity via an internal rail system and a 6-ton tank overhead monorail. The facility is oriented horizontally with an attached 10-foot-diameter by 10-foot-long valved test port. Additional test capabilities consist of a large staging area; access to a class 1,000 clean room; a machine shop; and automatic, unattended vacuum operations. The VF6 is one of more than 25 chambers included in the unique suite of vacuum facilities supporting space simulation ground testing at GRC.

## FACILITY APPLICATIONS

- Thermal vacuum testing of flight experiments
- Spacecraft hardware development
- Plasma interaction effects on spacecraft hardware and materials
- Advanced materials applications
- Electric propulsion research development
- Integration of space power systems
- Development and demonstration of advanced space power



## CHARACTERISTICS

Overall dimensions	
Main chamber	25 feet in diameter x 70 feet long
Test port	10 feet in diameter x 10 feet long
Internal working dimensions	
Main chamber	22 feet in diameter x 65 feet long
Test port	10 feet in diameter x 10 feet long
Vacuum system	12 54-inch nude cryopumps provide a no-load pressure of $5 \times 10^{-7}$ Torr and a pumping speed of 900,000 liters/second on air
Thermal simulation	
Cold	Liquid-nitrogen-cooled shroud (77 K) with thermal heat rejection of 240 kW
Heat	Solar simulator provides 1.2 solar constants on 5-meter target (56.5 feet away from source) Solar constant increases as function of source distance and target size Other attributes include a 1° subtense angle, 270 kW solar array simulation, and 10 percent beam uniformity Configurable lamps available upon request
Instrumentation	Thermocouples, RGA, TQCM, cameras, and other necessary test equipment
Additional	Multiple test port and feedthroughs, automatic and unattended vacuum operation, large staging area, class 1,000 clean room, machine shop, 16-ton chamber loading capacity, 6-ton internal tank monorail, and 10-ton crane

## CONTACT INFORMATION

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